Art. XVII.—*On some* Foraminifera *and* Ostracoda *obtained off Great Barrier Island, New Zealand.*

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Plate III.

Introductory Remarks.

The following series of *Foraminifera* and *Ostracoda* was obtained from material collected during the dredging operations carried out by Messrs. Hedley and Suter, under the auspices of the Australasian Association for the Advancement of Science, at the Dunedin meeting in 1904.

The sounding from which the microzoa were selected was taken in lat. 36° 8′ S., long. 175° 55′ E., off Great Barrier Island, North Island New Zealand, at a depth of 110 fathoms. This locality is not far from the "Challenger" station 169, where at a depth of 100 fathoms the water had a temperature of 55·2°.* At this station, at a depth of 700 fathoms, sixty-six species of *Foraminifera*, but no *Ostracoda*, were recorded. Of the *Foraminifera*, twenty-eight species are common to both localities, after making allowance for changes in some of the specific names of the earlier record. The *Ostracoda* are dealt with in detail in the sequel to this paper.

The sounding off Great Barrier Island is remarkable for the extraordinary abundance of specimens of *Biloculina*, *Nodosaria*, *Cristellaria*, and *Truncatulina*, and their full development is indicative of especially favourable conditions of life in that particular area.

Another interesting feature of the present assemblage of *Foraminifera* is the presence of a large number of forms which have hitherto been found in dredgings from other, widely removed, areas, generally in the Northern Hemisphere; and particularly from the colder waters of the Temperate Zone.

The following is a list of the *Foraminifera* embodied in this report; the species new to the New Zealand area, according to the list given in Captain Hutton's "Index Faunæ Novæ-Zealandiæ," being marked with an asterisk. Of the 103 species of *Foraminifera* enumerated, fifty-seven are new to this area, whilst one is new to science, and constitutes the type of a new genus.

**Biloculina pisum*, Schlumberger.
**B. anomala*, Schlum.

* Chall. Reports, Summary of Results, pt. i, 1895, p. 605.

Miliolina insignis, H. B. Brady.
M. circularis, Born. sp.
M. seminulum, Linné sp.
**M. vulgaris*, d'Orb. sp.
M. bicornis, W. and J. sp.
**M. agglutinans*, d'Orb. sp.
Planispirina sphæra, d'Orb. sp. (*Biloculina* in "Index").
Pelosina cylindrica, Brady.
P. variabilis, Brady.
P. rotundata, Brady.
**Brachysiphon corbuliformis*, gen. et sp. nov.
Reophax scorpiurus, Montfort sp.
Haplophragmium canariense, d'Orb. sp.
H. globigeriniforme, P. and J. sp.
**H. calcareum*, Brady.
Ammodiscus tenuis, Reuss.
**Textularia conica*, d'Orb.
**T. inconspicua*, Brady.
**T. trochus*, d'Orb.
**T. turris*, d'Orb.
**T. gramen*, d'Orb.
T. gibbosa, var *tuberosa*, d'Orb. (*T. aspera* in "Index").
Spiroplecta sagittula. Defr. sp. (*Textularia* in "Index").
**S. sagittula*, var. *fistulosa*, Brady.
Clavulina communis, d'Orb.
**C. rudis*, Costa sp.
**C. soldanii*, J. and P. sp.
Bulimina pyrula, d'Orb.
**B. pyrula*, var. *spinescens*, Brady.
**B. marginata*, d'Orb.
B. inflata, Seguenza.
Virgulina subsquamosa, Egger.
**Bolivina robusta*, Brady.
**B. karreriana*, Brady.
**Cassidulina lævigata*, d'Orb.
C. subglobosa, Brady.
**C. bradyi*, J. Wright.
**Lagena elongata*, Ehrenb. sp.
**L. gracillima*, Seg. sp.
L. striata, d'Orb. sp.
**L. sulcata*, W. and J. sp.
L. hispida, Reuss.
L. hexagona, Williamson sp.
**L. lacunata*, Burrows and Holland.
**Nodosaria hispida*, d'Orb.
**N. pyrula*, d'Orb.
**N. (D.) consobrina*, d'Orb. sp.
**N. (D.) consobrina*, var. *emaciata*, Reuss.

N. (D.) filiformis, d'Orb.
N. (D.) farcimen, Reuss sp.
N. (D.) soluta, Reuss sp.
N. (D.) pauperata, d'Orb. sp.
N. (D.) roemeri, Neug. sp.
N. (D.) obliqua, Linné sp.
N. (D.) obliqua, var. *vertebralis*, Batsch var.
Frondicularia reussi, Karrer.
Marginulina glabra, d'Orb.
Cristellaria tenuis, Born. sp.
C. reniformis, d'Orb.
C. schloenbachi, Reuss.
C. tricarinella, Reuss.
C. italica, Defr. sp.
C. latifrons, Brady.
C. articulata, Reuss sp.
C. rotulata, Lam. sp.
C. orbicularis, d'Orb. sp.
C. cultrata, Montf. sp.
C. mamilligera, Karrer.
C. costata, F. and M. sp.
Uvigerina asperula, Cz.
U. pygmæa, d'Orb.
Ramulina globulifera, Brady (not noted in "Index," but recorded by Brady west of New Zealand).
R. lævis, Jones.
Globigerina bulloides, d'Orb.
G. triloba, Reuss.
G. inflata, d'Orb.
G. æquilateralis, Brady.
Orbulina universa, d'Orb.
Sphæroidina bulloides, d'Orb.
Pullenia sphæroides, d'Orb. sp.
P. quinqueloba, Reuss sp.
Truncatulina tenuimargo, Brady.
T. reticulata, Cz. sp.
T. wuellerstorfi, Schwager sp.
T. lobatula, W. and J. sp.
T. variabilis, d'Orb.
T. ungeriana, d'Orb. sp.
T. akneriana, d'Orb. sp.
T. pygmæa, Hantken.
T. haidingeri, d'Orb. sp.
T. (?) præcincta, Karrer sp.
Anomalina polymorpha, Costa.
Pulvinulina truncatulinoides, d'Orb. sp. (in "Index" as *micheliniana*).
P. crassa, d'Orb. sp.

P. canariensis, d'Orb. sp.
**P. auricula*, F. and M. sp.
**P. schreibersii*, d'Orb. sp.
Rotalia soldanii, d'Orb.
**R. papillosa*, var. *compressiuscula*, Brady.
R. clathrata, Brady.
Nonionina umbilicatula, Montagu sp.

References given below are restricted to the original records and one or two of the more important of later date.

Order FORAMINIFERA.

Family MILIOLIDÆ.

Subfamily MILIOLININÆ.

Genus **Biloculina**, d'Orbigny.

Biloculina pisum, Schlumberger.

Biloculina pisum, Schlumberger, 1891, Mém. Soc. Zool. France, vol. iv, p. 569, pl. xi, figs. 81–83; text-figure 31.

This species is hardly distinguishable in external appearance from the nearly allied *B. vespertilio*, Schlumberger,* and *B. bradii*, Schl.†; the shape of the aperture being one of the characters which separate it. Upon slicing the tests, however, the identity of our specimens with the above, *B. pisum*, is at once apparent, since the internal arrangement of the chambers in their relation to one another, especially at the point of incurvation and fusion to the previous chamber-wall, is characteristic of this species and *B. comata*, Brady.‡ The latter species is distinguished by its externally striated shell-surface; the arrangement of the initial series of chambers is also different, and the wall of the first chamber in *B. comata* (form A) is thick, whilst in *B. pisum* (form A) it is very thin.

The original locality given by Schlumberger for *B. pisum* is the Mediterranean.

Although this form is quite common in the present series, the tests all appear to belong to the megalospheric type of shell (form A), as Schlumberger also found.

Biloculina anomala, Schlumberger.

Biloculina anomala, Schlumberger, 1891, Mém. Soc. Zool. France, vol. iv, p. 569, pl. xi, figs. 84–86; pl. xii, fig. 101; text-figures 32–34.

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* *Op. supra cit.*, p. 561.
† *Op. supra cit.*, p. 557.
‡ Rep. Chall., vol. ix, 1884, p. 144, pl. iii, figs. 9 *a*, *b*.

This species was found by Schlumberger in dredgings from the Mediterranean, at a depth of 555 meters. A solitary specimen, agreeing in all external characters with the above, is found in our series.

Genus **Miliolina**, Williamson.

Miliolina insignis, Brady.

Miliolina insignis, Brady, 1884, Rep. Chall., vol. ix, p. 165, pl. iv, figs. 8, 10.

This species is fairly common in the present series. It attains the unusual length of 3 mm.

M. insignis has a wide distribution and a great range in depth. One of the localities in which it has previously been found is Bass Strait, 150 fathoms.

Miliolina circularis, Bornemann sp.

Triloculina circularis, Bornemann, 1855, Zeitschr. d. deutsch. geol. Gesellsch., vol. vii, p. 349, pl. xix, fig. 4.

Miliolina circularis, Born. sp., Millet, 1898, Journ. R. Micr. Soc., p. 499, pl. xi, figs. 1–3.

Only one example of this form occurs in our series, and this is fairly typical. Millett's specimens were obtained from the Malay Archipelago. Egger records it ("Gazelle" Exped.) from two stations off the Australian coast, and the "Challenger" obtained it in Bass Strait.

Miliolina seminulum, Linné sp.

Serpula seminulum, Linné, 1767, Syst. Nat., 12th ed., p. 1264, No. 791.

Miliolina seminulum, Linné sp., Brady, 1884, Rep. Chall., vol. ix, p. 157, pl. v, figs. 6 *a–c*.

One small but otherwise typical example of this widely distributed form occurs in our series.

Miliolina vulgaris, d'Orbigny sp.

Quinqueloculina vulgaris, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 302, No. 33.

Q. vulgaris, d'Orb., Schlumberger, 1893, Mém. Soc. Géol. France, vol. vi, p. 207, pl. ii, figs. 65, 66; woodcuts, figs. 13, 14.

As a recent species this is usually recorded under the name of *Miliolina auberiana*, d'Orb sp. Its nearest geographical occurrence to the present one is in the Malay Archipelago, where it was found by Millett. It is also an abundant form in the Tertiary deposits of Australia. In the present series it is not uncommon.

Miliolina bicornis, Walker and Jacob sp.

Serpula bicornis, Walker and Jacob, 1798, Adams Essays, Kanmacher's ed., p. 633, pl. xiv, fig. 2.

Miliolina bicornis, W. and J. sp., Goës, 1894, K. Svenska Vet.-Akad. Handlingar, vol. xxv, p. 113, pl. xxi, figs. 860, 861.

Occasional examples of the above species were met with in the present material. It is a widely distributed form, and is most abundant in quite shallow water, the depth at which the present soundings were taken, 110 fathoms, being near the deepest limit of its occurrence.

Miliolina agglutinans, d'Orbigny sp.

Quinqueloculina agglutinans, d'Orbigny, 1839, Foram. Cuba, p. 168, pl. xii, figs. 11–13.

Miliolina agglutinans, d'Orb. sp., Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv, p. 110, pl. xix, fig. 848, and plate xx, fig. 849.

Only one typical example of this widely distributed species occurred in this series.

Subfamily Hauerininæ.

Genus **Planispirina**, Seguenza.

Planispirina sphæra, d'Orbigny sp.

Plate III, figs. 1 *a*, *b*.

Biloculina sphæra, d'Orbigny, 1839, Foram. Amér. Mérid., p. 66, pl. viii, figs. 13–16. Brady, 1884, Rep. Chall., vol. ix, p. 141, pl. ii, figs. 4 *a*, *b*.

Planispirina sphæra, d'Orb. sp., Schlumberger, 1891, Mém. Soc. Zool. France, vol. iv, p. 577, text-figures 45, 46.

The examples in the present collection all show the normal V-shaped aperture, with one exception; this is of larger dimensions, and has a labyrinthic orifice (see figure). The smaller specimens have diameters ranging from 0·425 mm. to 0·8 mm., whilst the specimen with a labyrinthic aperture has a diameter of 1·4 mm.

This species, although never very abundant, is well distributed both as to geographical range and depth. It has already been recorded from this locality at station 169 ("Challenger").

Family ASTRORHIZIDÆ.

Subfamily Astrorhizinæ.

Genus **Pelosina**, Brady.

Pelosina cylindrica, Brady.

Pelosina cylindrica, Brady, 1884, Rep. Chall., vol. ix, p. 236, pl. xxvi, figs. 1–6.

The occurrence of this species at a depth of only 110 fathoms is interesting, since in the "Challenger" dredgings it was an essentially deep-water form; the least depth at which it was found was 620 fathoms. It was also recorded from the "Challenger" station 169, in 700 fathoms. The "Gazelle" expedition obtained this species, however, at 82–86 meters (44 to 47 fathoms), from Western Australia.

Our specimens are typical, and of the normal size. The walls of the test are formed of a fine grey calcareous mud. Somewhat common.

Pelosina variabilis, Brady.

Pelosina variabilis, Brady, 1879, Quart. Journ. Micr. Sci., vol. xix, n.s., p. 30, pl. iii, figs. 1–3.

This interesting form is rare in our series. It was found in the "Challenger" dredgings at station 169, near to the present locality, at a depth of 700 fathoms.

Pelosina rotundata, Brady.

Pelosina rotundata, Brady, 1879, Quart. Journ. Micr. Sci., vol. xix, n.s., p. 31, pl. iii, figs. 4, 5.

The specimens found in our samples are not so evenly shaped as usual, but there seems to be no doubt of their identity with the above species.

The "Challenger" soundings from near this locality have yielded the same species at a depth of 700 fathoms.

Subfamily Rhabdammininæ.

Genus **Brachysiphon**, gen. nov.

(Deriv.—*βραχύς*, short; *σίφων*, a tube).

Generic Characters. — Test tubular, short, open at both ends or closed at one; consisting of an inner chitinous tube incrusted with sand-grains or small foraminiferal tests, as *Globigerina*, in the only species at present known. Aperture more or less circular, bordered by the thickened chitinous lining of the interior.

Brachysiphon corbuliformis, sp. nov.

Plate III. figs. 2 *a*, *b*, 3.

Description.—Test roughly cylindrical, short; orally depressed, also basally when double-apertured; irregular in outline; composed of sand-grains and tests of other *Foraminifera*, as *Globigerina*, cemented to a brown chitinous base or internal lining. Aperture more or less circular.

Dimensions.—About 0·8 mm. in diameter. Aperture about 0·28 mm. across.

This species reminds one of *Proteonina difflugiformis*, Brady sp., var. *testacea*, Flint,* in its general appearance. It differs morphologically, however, in having a cylindrical cavity instead of an inflated chamber.

Rather common. Off Great Barrier Island, New Zealand, 110 fathoms.

Family LITUOLIDÆ.

Subfamily LITUOLINÆ.

Genus **Reophax,** Montfort.

Reophax scorpiurus, Montfort sp.

Reophax scorpiurus, Montfort. 1808. Conchyl. Systém., vol. i, p. 330, 83e genre. Brady, 1884, Rep. Chall., vol. ix, p. 291, pl. xxx, figs. 12–17.

Only two specimens of this widely distributed form occur in our series. The test, in each example, is formed of loosely cemented sand-grains. One specimen has a blunt termination, whilst the other gradually tapers to a point.

Genus **Haplophragmium,** Reuss.

Haplophragmium canariense, d'Orbigny sp.

Nonionina canariensis, d'Orbigny, 1839, Foram. Canaries, p. 228, pl. ii, figs. 33, 34.

Haplophragmium canariense, Brady, 1884, Rep. Chall , vol. ix, p. 310, pl. xxxv, figs. 1–5.

Several very fine and typical specimens occur in this dredging. Their tests are of a yellow to a ruddy-brown colour, and their texture somewhat coarsely arenaceous. It is a widely distributed form in recent deposits.

Haplophragmium globigeriniforme, Parker and Jones sp.

Lituola nautiloidea, var. *globigeriniformis*, Parker and Jones, 1865, Phil. Trans., vol clv, p. 407, pl. xv, figs. 46, 47.

Haplophragmium globigeriniforme, P. and J. sp., Brady, 1884, Rep. Chall., vol. ix, p. 312, pl. xxxv, figs. 10, 11.

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* Rep. U.S. Nat. Mus. for 1897 (1899), p. 273, pl. xvi, fig. 1.

Brady regards this species as essentially of deep-water habitat, and it is consequently not surprising to find it but rarely in the sounding off Great Barrier Island. One of the specimens was accidentally broken, and showed the test to be very thin, and formed of almost uniform sand-grains very neatly cemented, and having a smooth surface both on the interior and exterior. In our specimen the chambers increase very rapidly in size with growth.

H. globigeriniforme has been recorded from the "Challenger" sta. 169, at 700 fathoms.

Haplophragmium calcareum, Brady.

Haplophragmium calcareum, Brady, 1884, Rep. Chall., vol. ix, p. 302, pl. xxxiii, figs. 5–12.

A typical specimen occurs in our series. It is almost entirely a tropical species, an exception occurring, in the "Challenger" records, off Sydney, 410 fathoms.

Subfamily Trochammininæ.

Genus **Ammodiscus**, Reuss.

Ammodiscus tenuis, Brady.

Ammodiscus tenuis, Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi, n.s., p. 51. *Id.*, 1884, Rep. Chall., vol. ix, p. 332, pl. xxxviii, figs. 4–6.

The form distinguished as *A. tenuis* occurs with some frequency in our sounding. It has been previously recorded,* in company with *A. incertus*, d'Orb., from a neighbouring locality—station 169; and Dr. Brady, indeed, threw out the suggestion that the form was perhaps only a local variety of the better-known and ubiquitous species *A. incertus*.

Dr. Rhumbler has also remarked about this species,† "Die Scheibe ist dünner, die welcher sie vielleicht die megalosphärische Form darstellt."

A general examination of our specimens showed the initial portion of the coil in every case to commence with a more or less swollen "protoconch" or (?) megalosphere. This is subject to much variation in size, which at first seemed to lend support to the idea that a microsphere might be present in *A. tenuis*. To conclusively settle this doubtful point, however, it will necessitate the examination of a further series of specimens.

* Rep. Chall., Summary of Results, vol. i, 1895, p. 605.
† Archiv für Protistenkunde, vol. iii, 1903, p. 281.

The initial portion of the shell is subspheroidal, and seems to be merely an inflation of the tubular part of the shell. The dimensions of some of the initial chambers in their longest diameter are as follows: Specimens figured by Brady—360μ and 300μ. From the present series—100μ, 75μ, 50μ.

Family TEXTULARIIDÆ.

Subfamily TEXTULARIINÆ.

Genus **Textularia,** Defrance.

Textularia conica, d'Orbigny.

Textularia conica, d'Orbigny, 1839, Foram. Cuba, p. 135, pl. i, figs. 19, 20. Brady, 1884, Rep. Chall., vol. ix, p. 365, pl. xliii, figs. 13, 14; pl. cxiii, figs. 1 *a*, *b*.

One characteristic specimen.

Textularia inconspicua, Brady.

Textularia inconspicua, Brady, 1884, Rep. Chall., vol. ix, p. 357, pl. xlii, fig. 6. Millett, 1899, Journ. R. Micr. Soc., p. 557, pl. vii, fig. 1.

One specimen of this elegant little form occurs in the present series. The localities previously recorded for this species are—off East Moncœur Island, Bass Strait; Nares Harbour, Admiralty Islands; the *Hyalonema* ground, south of Japan; and the Malay Archipelago.

Textularia trochus, d'Orbigny.

Textularia trochus. d'Orbigny, 1840, Mém. Soc. Géol. France, vol. iv, p. 45, pl. iv, figs. 25, 26. Brady, 1884, Rep. Chall., vol. ix, p. 366, pl. xliii, figs 15–19; pl. xliv, figs. 1–3. Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii. p. 273, pl. vi, figs. 37, 38.

Two fairly well grown specimens occur in the present series, having non-limbate sutures.

Textularia turris, d'Orbigny.

Textularia turris, d'Orbigny, 1840, Mém. Soc. Géol. France, vol. iv, p. 46, pl. iv, figs. 27, 28. Brady, 1884, Rep. Chall., vol. ix, p. 366, pl. xliv, figs. 4, 5.

It is interesting to meet with this species off Great Barrier Island, since it is rare in the recent condition. It has only been observed previously off Culebra Island, 390 fathoms, and off the coast of South America, south-east of Pernambuco, 350 fathoms.

Textularia gramen, d'Orbigny.

Textularia gramen, d'Orbigny, 1846, Foram. Foss. Vienne. p. 248, plate xv, figs. 4–6. Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 272, pl. vi, figs. 24–26.

Two characteristic specimens of this well-distributed form occur in our series.

Textularia gibbosa, var. **tuberosa**, d'Orbigny.

Textularia tuberosa, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 263, No. 26.

T. aspera, Brady, 1882, Proc. R. Soc. Edin., vol. xi, p. 715. *Id.*, 1884, Rep. Chall., vol. ix, p. 367, pl. xliv, figs. 9–13.

T. gibbosa, forma *tuberosa*, d'Orbigny, Fornasini, 1903, Mem. Acc. Sci. Ist. Bologna, ser. v, vol. x, p. 300, pl. O, fig. 2.

The recent examples are better known under the name of *T. aspera*, Brady, which is, however, identical in its essential characters with the earlier-described *T. tuberosa*. Our specimens have the ruddy-brown tests similar in colour to the examples found in North Atlantic.

Genus **Spiroplecta**, Ehrenberg.

Spiroplecta sagittula, Defrance sp.

Textularia sagittula, Defrance, 1824, Dict. Sci. Nat., vol. xxxii, p. 177; 1828, vol. liii, p. 344; Atlas Conch., pl. xiii, fig. 5.

Spiroplecta sagittula, Defr. sp., J. Wright, 1891, Proc. R. Irish Acad., p. 471.

This species and the following variety attain to a great length in this deposit, some of the specimens measuring 4 mm. *T. sagittula* was found off the coast of New Zealand (sta. 169) by the "Challenger."

Spiroplecta sagittula, Defr. sp., var. **fistulosa**, Brady.

Plate III, fig. 4.

Textularia sagittula, Defr., var. *fistulosa*, Brady, 1884, Rep. Chall., vol. ix, p. 362, pl. xiii, figs. 19–22.

This variety is much more abundant in the present series than the specific form, and attains approximately the same length.

Genus **Clavulina**, d'Orbigny.

Clavulina communis, d'Orbigny.

Clavulina communis, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 268, No. 4. Brady, 1884, Rep. Chall., vol. ix, p. 394, pl. xlviii, figs. 1–13.

This species is not at all common, but typical specimens occur, measuring about 3 mm. in length. It has been already recorded from the Southern Ocean, and is more commonly found in the Southern Hemisphere.

Clavulina rudis, Costa sp.

Glandulina rudis, Costa, 1857, Mem. R. Acc. Sc. Napoli. vol. ii, p. 142, pl. i, fig. 12.
Clavulina cylindrica, Hantken, 1875, Mittheil. Jahrb. d. k. ung. geol. Anstalt, vol. iv, p. 18. pl. i, fig. 8.
C. rudis, Costa sp., Fornasini, 1883, Boll. Soc. Geol. Ital., vol. ii, p. 184, pl. ii, fig. 4. A. Silvestri, 1904, Mem. d. Pontif. Accad. Rom. d. Nuovi Lincei, vol. xxii, p. 259, p. 262, text-figs. 8–10.

Several specimens were found, agreeing in all essentials with the forms figured by previous authors.

The "Challenger" discovered this species (recorded as *C. cylindrica* by Brady) on the west coast of New Zealand, at 275 fathoms.

Clavulina soldanii, Jones and Parker sp.

Lituola soldanii, Jones and Parker, 1860, Quart. Journ. Geol. Soc., vol. xvi, p. 307, No. 184.
Haplostiche soldanii, J. and P. sp., Brady, 1884, Rep. Chall., vol. ix, p. 318, pl. xxxii, figs. 12–18.
Clavulina soldanii, J. and P. sp., Goës, 1896, Bull. Mus. Comp. Zool. Harvard, vol. xxix, No. 1, pt. xx, p. 37, pl. iv, figs. 39–46.

Goës has shown that certain slender forms of this species exhibit a definite valvuline aperture, whilst others have a modified labyrinthic opening.

Our specimens clearly display the valvuline character of the aperture.

Not uncommon.

Subfamily Buliminin.æ.

Genus **Bulimina,** d'Orbigny.

Bulimina pyrula, d'Orbigny.

Bulimina pyrula, d'Orbigny, 1846, Foram. Foss. Vienne, p. 184, pl. xi, figs. 9, 10. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 290, pl. xxxvi, figs. 4, 5. Millett, 1900, Journ. R. Micr. Soc., p. 275.

Several specimens, with thin glassy tests, occur in the present series.

B. pyrula was also found at station 169 by the "Challenger."

Bulimina pyrula, d'Orbigny, var. **spinescens,** Brady.

Bulimina pyrula, d'Orbigny, var. *spinescens,* Brady, 1884, Rep. Chall., vol. ix, p. 400, pl. l, figs. 11, 12.

Occasional in our series. It has occurred off the coast of Norway (Parker and Jones), and off Ki Islands, Eastern Archipelago, 580 fathoms (Brady).

Bulimina marginata, d'Orbigny.

Bulimina marginata, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 269, No. 4, pl. xii, figs. 10–12. Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 287, pl. viii, figs. 69, 70.

This widely distributed form is abundant in the sounding off Great Barrier Island.

Bulimina inflata, Seguenza.

Bulimina inflata, Seguenza, 1862, Atti Accad. Gioenia Sci. Nat., ser. 2, vol. xviii, p. 109, pl. i, fig. 10. Millett, 1900, Journ. R. Micr. Soc., p. 279.

The above species has a somewhat wide distribution. It is rather unusual to find it at a depth of only 100 fathoms, as it is a fairly deep-water species.

A single specimen occurred in our series.

Genus **Virgulina,** d'Orbigny.

Virgulina subsquamosa, Egger.

Virgulina subsquamosa, Egger, 1857, Neues Jahrb. für Min., &c., p. 295, pl. xii, figs. 19–21. Brady, 1884, Rep. Chall., vol. ix, p. 415, pl. lii, figs. 7–11.

This species is rather abundant in the present sounding. It does not appear to have been found before in this locality. It has been recorded, however, from station 165B ("Challenger") between Sydney and New Zealand.

Genus **Bolivina,** d'Orbigny.

Bolivina robusta, Brady.

Bolivina robusta, Brady, 1884, Rep. Chall., vol. ix, p. 421, pl. liii, figs. 7–9. Millett, 1900, Journ. R. Micr. Soc., p. 543.

Our specimens are rather small, but otherwise typical. It is apparently new to this particular area.

Bolivina karreriana, Brady.

Bolivina karreriana, Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi, n.s., p. 58. *Id.*, 1884, Rep. Chall., vol. ix, p. 424, pl. liii, figs. 19–21. Millett, 1900, Journ. R. Micr. Soc., p. 546.

The finer washings from the sounding off Great Barrier Island have yielded this species in abundance. It is new to the New Zealand area. Among other places recorded are Western Australia by Egger ("Gazelle") at 359 meters, and from the Malay Archipelago by Millett.

Subfamily Cassidulininæ.

Genus **Cassidulina**, d'Orbigny.

Cassidulina lævigata, d'Orbigny.

Cassidulina lævigata, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 282 (No. 1), pl. xv, figs. 4, 5; modèle No. 41. A. Silvestri, 1896, Pontif. Accad. Nuovi Lincei, vol. xii, p. 103, pl. ii, fig. 10.

Two specimens were found in our series. The species has a wide distribution, and has been found in the Southern Ocean as far as the Antarctic ice-barrier (Brady).

Cassidulina subglobosa, Brady.

Cassidulina subglobosa, Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi, n.s., p. 60. *Id.*, 1884, Rep. Chall., vol. ix, p. 430, pl. liv, figs. 17 *a–c*.

This species has already been recorded from the South Pacific, and also from the Southern Ocean. It is not infrequent in the present collection.

Cassidulina bradyi, J. Wright.

Cassidulina bradyi (Norman MS.), J. Wright, 1880, Proc. Belfast Nat. Field Club, Appendix, p. 152.
C. bradyi, Norman, H. B. Brady, 1884, Rep. Chall., vol. ix, p. 431, pl. liv, figs. 6–10.

This species has always been referred to on the authority of Norman. The first published reference to it, however, was by Joseph Wright, who described it as "a crozier-shaped *Cassidulina*." Several examples of this pretty species occur in our series. It has been found in the South Pacific, but does not seem to have previously occurred near the present locality.

Family LAGENIDÆ.

Subfamily Lageninæ.

Genus **Lagena**, Walker and Boys.

Lagena elongata, Ehrenberg sp.

Miliola elongata, Ehrenberg. 1854, Mikrogeologie, pl. xxv, fig. 1.

Lagena elongata, Ehr. sp., Brady, 1884, Rep. Chall., vol. ix, p. 457, pl. lvi. fig. 29. Millett, 1901, Journ. R. Micr. Soc., p. 492, pl. viii, fig. 10.

One specimen found, slightly curved.

Lagena gracillima, Seguenza sp.

Amphorina gracillima, Seguenza, 1862, Foram. Monotal. Mess., p. 51, pl. i, fig. 37.

Lagena gracillima, Seg. sp., A. Silvestri, 1900, Mem. Pontif. Accad. Nuovi Lincei, vol. xvii, p. 245, pl. vi, fig. 42.

A specimen, resembling an attenuated pear-shaped pipette, occurs in the present series.

Lagena striata, d'Orbigny sp.

Oolina striata, d'Orbigny, 1839, Foram. Amér. Mérid., p. 21, pl. v, fig. 12.

Lagena striata, d'Orb. sp., Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv, p. 75, pl. xiii. figs. 732–736. Millett, 1901, Journ. R. Micr. Soc., p. 487.

A perfect specimen was found in our sounding, showing a faint, oblique annulation of the neck.

Lagena sulcata, Walker and Jacob sp.

Serpula (Lagena) striata sulcata rotundata, Walker and Boys 1784, Test. Min., p. 2, pl. 1, fig 6.

Lagena sulcata, W. and J. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 307, pl. liii, fig. 7. Millett, 1901, Journ. R. Micr. Soc., p. 488.

One specimen was found in our sounding, having thin but not expansive riblets.

Lagena hispida, Reuss.

Lagena hispida, Reuss, 1858, Zeitschr. d. deutsch. geol. Gesellsch., vol. x, p. 434. *Id.*, 1863, Sitzungsb. d. k. Ak. Wiss. Wien, vol. xlvi, p. 335, pl. vi, figs. 77–79. Brady, 1884, Rep. Chall., vol. ix, p. 459, pl. lvii, figs. 1–4; pl. lix, figs. 2, 5. Flint, 1899 (1897), Rep. U.S. Nat. Mus., p. 307, pl. liii, fig. 8.

A typical specimen, having a slender neck, occurs in our series.

Lagena hexagona, Williamson sp.

Entosolenia squamosa, var. *hexagona*, Williamson, 1848, Ann. and Mag. Nat. Hist., ser. 2, vol. i, p. 20, pl. ii, fig. 23.

Lagena hexagona, Williamson sp., Millett, 1901, Journ. R. Micr. Soc., p. 8.

A single typical specimen of this elegant form occurs in our material.

Lagena lacunata, Burrows and Holland.

Lagena lacunata, Burrows and Holland, 1895, in Jones's Palæont. Soc. Mon., Crag. Foram., pt. ii, p. 205, pl. vii, fig. 12.

This species is distinguished from the better-known *L. castrensis*, Schwager, by the depressions on the faces of the test. Millett regards both of these forms, perhaps rightly, as one variety of *L. orbignyana*.

L. lacunata is not uncommon in our soundings.

Subfamily Nodosariinæ.

Genus **Nodosaria,** d'Orbigny.

Nodosaria hispida, d'Orbigny.

Nodosaria hispida, d'Orbigny, 1846, Foram. Foss. Vienne, p. 35, pl. i, figs. 24, 25. Egger, 1899, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xxi, p. 79, pl. ix, figs. 23, 24.

This is a very variable form, the only constant character being the hispid surface of the test.

A single specimen was found off Great Barrier Island, which consists of two closely conjoined chambers with short, coarse prickles.

N. hispida has been met with in the South Pacific, but not very near the present locality.

Nodosaria pyrula, d'Orbigny.

Nodosaria pyrula, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 253, No. 13. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 309, pl. lv, fig. 4. Millett, 1902, Journ. R. Micr. Soc., p. 514.

Three specimens of this sparingly distributed form occur in our series. In each case the last chamber of the test is seen to contain a reddish-brown substance which is probably of the nature of dried protoplasm.

N. pyrula has been recorded from various observing-stations in the South Pacific, but not from the present locality.

Subgenus **Dentalina,** d'Orbigny.

Nodosaria (Dentalina) consobrina, d'Orbigny sp.

Dentalina consobrina, d'Orbigny, 1846, Foram. Foss. Vienne, p. 46, pl. ii, figs. 1–3. *Nodosaria (D.) consobrina,* d'Orbigny sp., Brady, 1884, Rep. Chall., vol. ix, p. 501, pl. lxii, figs. 23, 24.

A single specimen was found in our sample.

Nodosaria (D.) consobrina, d'Orb. sp., var. **emaciata,** Reuss.

Dentalina emaciata, Reuss, 1851, Zeitschr. d. deutsch. geol. Gesellsch., vol. iii. p. 63, pl. iii, fig. 9.

Nodosaria (D.) consobrina, d'Orb. sp., var. *emaciata,* Reuss, Brady, 1884, Rep. Chall., vol. ix, p. 502, pl. lxii, figs. 25, 26.

This slender variety is more common than the type form in the present series. It has already been recorded from the South Pacific.

Nodosaria (D.) filiformis, d'Orbigny.

Plate III, fig. 5.

Nodosaria filiformis, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 253, No. 14. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 310, pl. lv, fig. 6.

This species is distinguished by its long, slender, recurved test, with oval segments. It is not uncommon in the present series. Some of the specimens have a bulbous commencement, whilst others have the extremity attenuated and finely pointed. The latter variation agrees with the form figured by d'Orbigny under the name of *Dentalina elegans.*

N. (D.) filiformis has been recorded from the South Pacific, but not from the neighbourhood of Great Barrier Island.

Nodosaria (D.) farcimen, Reuss sp.

Dentalina farcimen, Reuss (after Soldani), 1863, Bull. Acad. Roy. Belg., ser. 2, vol. xv, p. 146, pl. i, fig. 18.

Nodosaria farcimen, Soldani sp., Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 309, pl. lv, fig. 5.

One specimen of this universally distributed form found in our series.

Nodosaria (D.) soluta, Reuss sp.

Dentalina soluta, Reuss, 1851, Zeitschr. d. deutsch. geol. Gesellsch., vol. iii, p. 63, pl. vii, fig. 4.

Nodosaria soluta, Reuss sp., Flint, 1899, Rep U.S. Nat. Mus. (1897), p. 310, pl. lvi, fig. 3. Millett, 1902, Journ. R. Micr. Soc., p. 516.

This species is not uncommon in the present series. Its occurrence at 110 fathoms off Great Barrier Island is in accordance with Dr. Brady's remark that in the South Pacific this species affects shallower water than in other localities. *N. (D.) soluta* has been recorded from the "Challenger" station 169 by Dr. Brady.

Nodosaria (D.) pauperata, d'Orbigny sp.

Dentalina pauperata. d'Orbigny, 1846, Foram. Foss. Vienne, p. 46, pl. i, figs. 57, 58.

Nodosaria (D.) pauperata, d'Orb. sp., Brady, 1884, Rep. Chall., vol. ix, p. 500, woodcuts, figs. 14 *a–c.*

This species is fairly typical, and occurs frequently in our series.

Nodosaria (D.) roemeri, Neugeboren sp.

Dentalina roemeri, Neugeboren, 1856, Denkschr. d. k. Akad. Wiss. Wien, vol. xii, p. 82, pl. ii, figs. 13–17.

N. (D.) roemeri, Neug. sp., Brady, 1884, Rep. Chall., vol. ix, p. 505, pl. lxiii, fig. 1.

This form has been recorded by Brady as being chiefly found in the North Atlantic, at depths of less than 1,000 fathoms. It is therefore the more interesting to meet with it in the present sounding off Great Barrier Island at 110 fathoms, where it is not uncommon.

Nodosaria (D.) obliqua, Linné sp.

Nautilus obliquus, Linné, 1767, Syst. Nat., 12th ed., p. 1163, 281; 1788, *Ibid.*, 13th (Gmelin's) ed , p. 3372, No. 14.

Nodosaria (D.) obliqua, Linné sp., Brady, 1884, Rep. Chall., vol. ix, p. 513, pl. lxiv, figs. 20–22. Goës, 1894, K. Svenska Vetenskaps-Akad. Handl., vol. xxv, No. 9, p. 70, pl. xii, figs. 691–696; pl. xiii, fig. 697.

This is one of the most noteworthy species of Foraminifera in the present series, and is here very abundant. It is not uncommon to find specimens reaching the extraordinary length of 9·5 mm. Some of the shells are rather irregular in growth, and tend to become sinuous.

N. (D.) obliqua has been previously recorded from "Challenger" station 169, near the present locality.

Nodosaria (D.) obliqua, L. sp., var. **vertebralis,** Batsch var.

Plate III, fig. 5.

Nautilus (Orthoceras) vertebralis, Batsch, 1791, Conchyl. des Seesandes, p. 3, No. 6, pl. ii, figs. 6 *a, b.*

Nodosaria vertebralis, Batsch sp., Brady, 1884, Rep. Chall., vol. ix, p. 514, pl. lxiii, fig. 35; pl. lxiv, figs. 11–14.

N. obliqua, L. sp., var. *vertebralis*, Batsch, Goës, 1894, K. Svenska Vetenskaps-Akad. Handl., vol. xxv, No. 9, p. 70, pl. xiii, figs. 698, 699.

That this form is only a variety of *N. obliqua* is clearly demonstrated by the present series of specimens. Indeed, it is somewhat difficult to satisfactorily separate the variety from the species in some cases.

Genus **Frondicularia**, Defrance.

Frondicularia reussi, Karrer.

Plate III, fig. 7.

Frondicularia reussi, Karrer, 1862, Sitzungsb. d. k. Ak. Wiss. Wien, vol. xliv, p. 441, pl. i, fig. 1.

Three examples of an ovate, striated *Frondicularia* were found off Great Barrier Island. They are almost exactly matched by Karrer's figured specimen, from the Miocene of the Vienna basin. The narrowest of our specimens may also be compared with Karrer's *F. sculpta*, figured on the same plate as the above. These shells are obviously of the same type as the earlier-described *F. annularis* of d'Orbigny,* from the Miocene of Baden; this, however, is a generally broader form.

This appears to be the first occurrence of *F. reussi* in recent deposits.

Genus **Marginulina**, d'Orbigny.

Marginulina glabra, d'Orbigny.

Marginulina glabra, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 259, No. 6; modèle No. 55. Brady, 1884, Rep. Chall., vol. ix, p. 527, pl. lxv, figs. 5, 6. Flint, 1899, Rep. U.S. Nat. Mus. (1879), p. 313, pl. lx, fig. 1. Millett, 1902, Journ. R. Micr. Soc., p. 526.

Two specimens, one short and stout (typical), the other more elongated, were found in our series.

Genus **Cristellaria**, Lamarck.

Cristellaria tenuis, Bornemann sp.

Marginulina tenuis, Bornemann, 1855, Zeitschr. d. deutsch. geol. Gesellsch., vol. vii, p. 326, pl. xiii, fig. 14.

Cristellaria tenuis, Born. sp., Brady, 1884, Rep. Chall., vol. ix, p. 535, pl. lxvi, figs. 21–23. Chapman, 1895, Proc. Zool. Soc. Lond., p. 33.

A characteristic example of this elegant little cristellarian was found in our sounding. It has also been recorded from

* Foram. Foss. Vienne, 1846, p. 59, pl. ii, figs. 44–47.

two places off the west coast of New Zealand, at 150 and 275 fathoms (Brady).

Cristellaria reniformis, d'Orbigny.

Cristellaria reniformis, d'Orbigny, 1846, Foram. Foss. Vienne, p. 88, pl. iii, figs. 39, 40. Brady, 1884, Rep. Chall., vol. ix, p. 539, pl. lxx, figs. 3 *a*, *b*. Chapman, 1895, Proc. Zool. Soc. Lond., p. 33. Flint, 1899, Rep. U.S. Nat. Mus. (1897) p. 315, pl. lxii, fig. 2.

A single example was found in the present sounding. This species has been previously recorded from the South Pacific, but is always found sparingly.

Cristellaria schloenbachi, Reuss.

Cristellaria schloenbachi, Reuss, 1862, Sitzungb. d. k. Ak. Wiss. Wien, vol. xlvi, p. 65, pl. vi, figs. 14, 15. Brady, 1884, Rep. Chall., vol. ix, p. 539, pl. lxvii, fig. 7. Millett, 1903, Journ. R. Micr. Soc., p. 253.

One fine example was found in our material.

The nearest recorded localities to the present appear to be Raine Island and the Malay Archipelago.

Cristellaria tricarinella, Reuss.

Cristellaria tricarinella, Reuss, 1862, Sitzungsb. d. k. Ak. Wiss. Wien, vol. xlvi, p. 68, pl. vii, fig. 9; pl. xii, figs. 2–4. Egger, 1893. Abhandl. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 159, pl. xii, figs. 28, 29.

This interesting cristellarian is fairly common in the present series. The "Challenger" records are all in the Pacific, one locality being off the west coast of New Zealand, at 150 fathoms. Egger records this species from Mauritius, and off the west coast of Australia ("Gazelle").

Cristellaria italica, Defrance sp.

Saracenaria italica, Defrance, 1824, Dict. Sci. Nat., vol. xxxii, p. 177; 1827, vol. xlvii, p. 344; Atlas Conch., pl. xiii, fig. 6. *Cristellaria italica*, Defr. sp., Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 316, pl. lxii, fig. 6. Millett, 1903, Journ. R. Micr. Soc., p. 256.

Several specimens were selected from our sample. It has a rather wide distribution, but it is never very common. It was found at four "Challenger" stations in the South Pacific.

Cristellaria latifrons, Brady.

Cristellaria latifrons, Brady, 1884, Rep. Chall., vol. ix, p. 544, pl. lxviii, fig. 19; pl. cxiii, figs. 11 *a*, *b*. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 316, pl. lxiii, fig. 3.

This handsome species is fairly well represented in our series by some broad but otherwise typical specimens.

C. latifrons was originally recorded by Brady from the "Challenger" station at Culebra Island, West Indies, 390 fathoms, and off the west coast of New Zealand, 275 fathoms. To these localities Flint adds Florida, and Gulf of Mexico, 60 to 210 fathoms.

Cristellaria articulata, Reuss sp.

Robulina articulata, Reuss, 1863, Sitzungsb. d. k. Ak. Wiss. Wien, vol. xlviii, p. 53, pl. v, fig. 62. *Cristellaria articulata*, Reuss sp., Brady, 1884, Rep. Chall., vol. ix, p. 547, pl. lxix, figs. 1–4, 10–12. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 317, pl. lxiv, fig. 2.

It is of much interest to add another locality for this somewhat restricted species. The previous records are Culebra Island, West Indies, 390 fathoms, and off Nightingale Island, Tristan d'Acunha, 100–150 fathoms (Brady); also Gulf of Mexico and off the Coast of Georgia, 169 to 276 fathoms (Flint).

C. articulata is characteristic and fairly common in our sounding off Great Barrier Island. No examples of wild-growing forms such as Dr. Brady describes were met with in the present series.

Cristellaria rotulata, Lamarck sp.

Lenticulites rotulata, Lamarck, 1804, Ann. Mus., vol. v, p. 188, No. 3; and 1806, vol. viii, pl. lxii, fig. 11.

Cristellara rotulata, Lam. sp., Flint. 1899, Rep. U.S. Nat. Mus. (1897), p. 314, pl. lxiv, fig. 4. Millett, 1903, Journ. R. Micr. Soc., p. 257.

This widely distributed species has already been recorded by the "Challenger" from station No. 169, off the east coast of New Zealand. It is not uncommon in our sounding off Great Barrier Island.

Cristellaria orbicularis, d'Orbigny sp.

Robulina orbicularis, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 288, pl. xv, figs. 8, 9.

Cristellaria orbicularis, d'Orb. sp., Chapman, 1895, Proc. Zool. Soc. Lond., p. 33. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 317, pl. lxiv, fig. 3.

A single specimen was found in our material. This species has been recorded off Sombrero Island, West Indies; and from the South Pacific—amongst other localities mentioned by Dr. Brady—off the west coast of New Zealand, 150 fathoms; off Sydney, 401 fathoms; and off Moncœur Island, Bass Strait, 38 fathoms. Dr. Flint found this species in the Gulf of Mexico at 210 and 169 fathoms.

Cristellaria cultrata, Montfort sp.

Robulus cultrata, Montfort, 1808, Conchyl. Syst., vol. i, p. 214, 54e genre.

Cristellaria cultrata, Montf. sp., Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 318, pl. lxv, fig. 2.

This species is common and widely distributed. It is somewhat abundant in our material.

Brady remarks of this species that it affects deeper water than the non-carinate *C. rotulata*, and that fine specimens are rarely met with at less than 100 fathoms. *C. cultrata* has been recorded by the "Challenger" from station No. 169, off the east coast of New Zealand.

Cristellaria mamilligera, Karrer.

Cristellaria mamilligera, Karrer, 1864, "Novara," Exped., geol. Theil, vol. i, Palæont., abth. ii, p. 76, pl. xvi, fig. 5. Brady, 1884, Rep. Chall., vol. ix, p. 553, pl lxx, figs. 17, 18.

The previous records of this species as a recent form are by Brady—off Kandavu, Fiji, 210 fathoms, and off the Philippines, 92 fathoms. One well-grown shell occurs in our material from Great Barrier Island.

C. mamilligera was found as a fossil by Dr. Karrer in the Tertiary greensandstone of New Zealand (Orakei Bay), and by C. von Gümbel in the nummulitic marl of the Bavarian Alps.

Cristellaria costata, Fichtel and Moll sp.

Nautilus costatus, Fichtel and Moll, 1798, Test. Micr., p. 47, pl. iv, figs. *g*, *h*, *i*.

Cristellaria costata, F. and M. sp., Brady, 1884, Rep. Chall., vol. ix, p. 555, pl. lxxi, figs. 8, 9. Millett, 1903, Journ. R. Micr. Soc., p. 258.

This is a rare form in recent deposits, the "Challenger" having only recorded it from three stations—at the Canaries, off Kandavu, Fiji, and off Raine Island, Torres Strait. *C. costata* has also been reported from the shores of the Adriatic, and Millett observed it in soundings from the Malay Archipelago. Two specimens were found off Great Barrier Island.

Subfamily Polymorphininæ.

Genus **Uvigerina**, d'Orbigny.

Uvigerina asperula, Czjzek.

Uvigerina asperula, Czjzek, 1848, Haidinger's Naturwiss. Abhandl., vol. ii, p. 146, pl. xiii, figs. 14, 15. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 320, pl. lxviii, fig. 4. Millett, 1903, Journ. R. Micr. Soc., p. 267.

U. asperula has been already recorded from New Zealand at "Challenger" station No. 169. Somewhat common in our sample.

Uvigerina pygmæa, d'Orbigny.

Uvigerina pygmæa, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 269, pl. xii, figs. 8, 9; modèle No. 67. Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv. p. 51, pl. ix, figs. 496–501. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 320, pl. lxviii, fig. 2. Millett, 1903, Journ. R. Micr. Soc., p. 269.

Frequent in our sounding, but the specimens are not well developed.

Subfamily Ramulininæ.

Genus **Ramulina**, Rupert Jones.

Ramulina globulifera, Brady.

Ramulina globulifera, Brady, 1879, Quart. Journ. Micr. Sci., n.s., vol. xix, p. 272, pl. viii, figs. 32, 33. *Id.*, 1884, Rep. Chall., vol. ix, p. 587, pl. lxxvi. figs. 22–28. Egger, 1893, Abhandl. k. bayer. Ak. Wiss., cl. ii, vol. xviii, p. 310, pl. ix, fig. 62. Jones and Chapman, 1897, Journ. Linn. Soc. Lond. (Zool.), vol. xxvi, p. 340, figs. 5–22. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 321, pl. lxviii, fig. 6. Millett, 1903, Journ. R. Micr. Soc., p. 274.

This species has a wide distribution, but is best developed in the Southern Hemisphere. The localities given by Brady are in the North Atlantic, the North Pacific, and the South Pacific (off the west coast of New Zealand at 145 and 275 fathoms, and near the Fiji Islands, and south of New Guinea). Egger has recorded this form from Western Australia, and Millett has lately found it in the Malay Archipelago.

The specimens from our sounding off Great Barrier Island are both numerous and large.

Ramulina lævis, Jones.

Ramulina lævis, Jones (in Wright), 1875, Proc. Belf. Nat. Field Club, 1873–74, append. iii, p. 88, pl. iii, fig. 19. Jones and Chapman, 1897, Journ. Linn. Soc. Lond. (Zool.), vol. xxvi, p. 339, figs. 1–4. Millett, 1903, Journ. R. Micr. Soc., p. 274.

Not so common as the preceding species. Millett records it from the Malay Archipelago.

Family GLOBIGERINIDÆ.

Genus **Globigerina**, d'Orbigny.

Globigerina bulloides, d'Orbigny.

Globigerina bulloides, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 277, No. 1; modèles Nos. 17, 76. Rhumbler, 1900, in K. Brandt's Nordische Plankton, heft 14, p. 21, figs. 24–26. Millett, 1903, Journ. R. Micr. Soc., p. 685.

G. bulloides has been previously recorded from the east coast of New Zealand (sta. 169, "Challenger").

In our sample specimens are fairly common, but small.

Globigerina triloba, Reuss.

Globigerina triloba, Reuss, 1849, Denkschr. Ak. Wiss. Wien, vol. i, p. 374, pl. xlvii, fig. 11. Fornasini, 1899, Mem. R. Accad. Sci. Ist. Bologna, ser. 5, vol. vii, p. 581, pl. ii, figs. 9, 10.

G. bulloides, d'Orb., var. *triloba*, Reuss, Rhumbler, 1900, in K. Brandt's Nordische Plankton, heft 14, p. 25.

This occurs in our sample with some frequency The specimens are small.

Globigerina inflata, d'Orbigny.

Globigerina inflata, d'Orbigny, 1839, Foram. Canaries, p. 134, pl. ii, figs. 7–9. Fornasini, 1899, Mem. R. Accad. Sci. Ist. Bologna, ser. 5, vol. vii, p. 577, pl. 1, fig. 3. Rhumbler, 1900, and in K. Brandt's Nordische Plankton, heft 14, p. 19, fig. 19. Millett, 1903, Journ. R. Micr. Soc., p. 687.

This species is rather common in our sounding. It has already been recorded from the east coast of New Zealand ("Challenger" sta. 169).

Globigerina æquilateralis. Brady.

Globigerina æquilateralis, Brady, 1879, Quart. Journ. Micr. Sci., n.s., vol. xix, p. 71. *Id.*, 1884, Rep. Chall., vol. ix, p. 605, pl. lxxx, figs. 18–21. Fornasini, 1899, Mem. R. Accad. Sci. Ist. Bologna, ser. 5, vol. vii, p. 580, pl. iv, figs. 3, 4. Rhumbler, 1900, in K. Brandt's Nordische Plankton, heft 14, p. 20, figs. 21–23. Millett, 1903, Journ. R. Micr. Soc., p. 689.

The above species has been previously recorded from the east coast of New Zealand ("Challenger" sta. 169). It is rare in our series.

Genus **Orbulina**, d'Orbigny.

Orbulina universa, d'Orbigny.

Orbulina universa, d'Orbigny, 1839, Foram. Cuba, p. 3, pl. i, fig. 1. Rhumbler. 1900, in K. Brandt's Nordische Plankton, heft 14, p. 27, figs. 27–30. Millett, 1903, Journ. R. Micr. Soc., p. 690.

This species has been already recorded from the "Challenger" station 169, off the east coast of New Zealand, 700 fathoms.

Our specimens are not numerous, and vary considerably in size.

Genus **Sphæroidina**, d'Orbigny.

Sphæroidina bulloides, d'Orbigny.

Sphæroidina bulloides, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 267, No. 1; modèle No. 65. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 325, pl. lxxi, fig. 1. Millett, 1903, Journ. R. Micr. Soc., p. 692.

This species is also one of the forms obtained from the east coast of New Zealand by the "Challenger." It is very rare in our series.

Genus **Pullenia**, Parker and Jones.

Pullenia sphæroides, d'Orbigny sp.

Nonionina sphæroides, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 293, No. 1; modèle No. 43.

Pullenia sphæroides, d'Orb. sp., Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii., abth. ii, p. 372, pl. xix, figs. 30, 31. Chapman, 1900, Proc. Calif. Acad. Sci., ser. 3, Geol., vol. i, p. 252, pl. xxx, fig. 6. Millett, 1903, Journ. R. Micr. Soc., p. 691.

One typical specimen of this widely distributed form found in our series.

Pullenia quinqueloba, Reuss sp.

Nonionina quinqueloba, Reuss, 1851, Zeitschr. deutsch. geol. Gesellsch., vol. iii, p. 47, pl. v, figs. 31 *a*, *b*.

Pullenia quinqueloba, Reuss sp., Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 324, pl. lxx, fig. 5.

This species is also very rare in the present series. It has been recorded from the east coast of New Zealand (sta. 169).

Family ROTALIIDÆ.

Subfamily ROTALIINÆ.

Genus **Truncatulina**, d'Orbigny.

Truncatulina tenuimargo, Brady.

Truncatulina tenuimargo, Brady, 1884, Rep. Chall., vol. ix, p. 662, pl. xciii, figs. 2, 3. Egger, 1893, Abhandl. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 399, pl. xvi, figs. 7–9.

This elegant little species is apparently almost confined to the Southern Hemisphere. It has already been found off the shores of New Zealand, and is a well-known Australian species. Our specimens have the keel strongly accentuated, and the chambers showing a nodulous appearance on the inferior surface as in Brady's figure 2.

Not common in our sample.

Truncatulina reticulata, Czjzek sp.

Rotalina reticulata, Czjzek, 1848, Haidinger's Naturw. Abhandl., vol. ii. p. 145, pl. xiii, figs. 7–9.

Planorbulina reticulata. Cz. sp., Goës, 1896, Bull. Mus. Comp. Zool. Harvard, vol. xxix, No. 1, p. 72.

Truncatulina reticulata, Cz. sp., Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 334, pl. lxxviii, fig. 3. Chapman, 1901, Journ. Linn. Soc. Lond. (Zool.), vol. xxviii, p. 194. Millett, 1904, Journ. R. Micr. Soc., p. 491.

T. reticulata has been previously found in the South Pacific, but it does not seem to have been recorded from the neighbourhood of the present locality. It is very rare in our series.

Truncatulina wuellerstorfi, Schwager sp.

Anomalina wuellerstorfi. Schwager, 1866, "Novara" Exped., geol. Theil, vol. ii, p. 258, pl. vii, fig. 105.

Truncatulina wuellerstorfi, Schwager sp., Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 333, pl. lxxvii, fig. 1. Millett, 1904, Journ. R. Micr. Soc., p. 492.

The above species is represented in the present series by a fair number of specimens. It does not appear to have been recorded from the vicinity of Great Barrier Island.

Brady regards this form as of essentially deep-water habit. In the South Pacific its range in depth is from 210 to 1940 fathoms, so that it is rather surprising to meet with so many typical specimens in our sounding at 110 fathoms.

Truncatulina lobatula, Walker and Jacob sp.

Nautilus lobatulus, Walker and Jacob, 1798, Adams's Essays, Kanmacher's ed., p. 642, pl. xiv, fig. 36.

Planorbulina lobatula, W. and J. sp., 1894, K. Svenska Vet.-Akad. Handl., vol. xxv, p. 88, pl. xv, fig. 774.

Truncatulina lobatula, W. and J. sp., Chapman, 1902, Proc. R. Soc. Edin., vol. xxiii, p. 392, pl. i, figs. 2, 3. Millett, 1904, Journ. R. Micr. Soc., p. 491.

Three typical specimens were found in the present sample. The species has been already recorded from the east coast of New Zealand (sta. 169).

Truncatulina variabilis, d'Orbigny.

Truncatulina variabilis, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 279, No. 8. Egger, 1893, Abhandl. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 404, pl. xvi, figs. 57–59, 63, 64. Chapman, 1901, Journ. Linn. Soc. Lond. (Zool.), vol. xxviii, p. 193. Millett, 1904, Journ. R. Micr. Soc., p. 492.

This species is rare in the present series. The examples found are characteristic.

Truncatulina ungeriana, d'Orbigny sp.

Rotalina ungeriana, d'Orbigny, 1846, Foram. Foss. Vienne, p. 157, pl. viii, figs. 16–18.

Planorbulina ungeriana, d'Orb. sp., Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv, p. 90, pl. xv, fig. 780.

Truncatulina ungeriana, d'Orb. sp., Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 333, pl. lxxvii, fig. 2. Chapman, 1901, Journ. Linn. Soc. Lond. (Zool.), vol. xxviii, p. 194. Millett, 1904, Journ. R. Micr. Soc., p. 493.

The specimens met with are fairly numerous, and one example shews a tendency towards a redundant growth of the last chamber.

Truncatulina akneriana, d'Orbigny sp.

Rotalina akneriana, d'Orbigny, 1846, Foram. Foss. Vienne, p. 156, pl. viii, figs. 13–15.

Truncatulina akneriana, d'Orb. sp., Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 333, pl. lxxvii, fig. 5. Millett, 1904, Journ. R. Micr. Soc., p. 494.

Three typical examples found.

Truncatulina pygmæa, Hantken.

Truncatulina pygmæa, Hantken, 1875, Mittheil. Jahrb. ung. geol. Anstalt, vol. iv, p. 78, pl. x, fig. 8. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 334, pl. lxxvii, fig. 6. Chapman, 1901, Journ. Linn. Soc. Lond. (Zool.), vol. xxviii, p. 194.

This species is usually found in deep water; it has, however, occurred in the lagoon at Funafuti, Ellice Islands. Very rare in the present series.

Truncatulina haidingeri, d'Orbigny sp.

Rotalina haidingeri, d'Orbigny, 1846, Foram. Foss. Vienne, p. 154, pl. viii, figs. 7–9.

Truncatulina haidingeri, d'Orb. sp., Brady, 1884, Rep. Chall., vol. ix, p. 663, pl. xcv, figs. 7 *a–c*.

T. (Rotalina) haidingeri, d'Orb. sp., Egger, 1893, Abhandl. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 401, pl. xvi, figs. 25–27.

T. haidingeri, d'Orb. sp., Millett, 1904, Journ. R. Micr. Soc., p. 493.

This species is very abundant in the present sounding, and it attains the unusually large size of 2·3 mm. in diameter. Besides the typical specimens there are some which seem to link, by their depressed superior face, the above species with a form like *T. præcincta*, Karrer, or *T. dutemplei*, d'Orb. sp. It is somewhat singular, considering its abundance, that this species has not hitherto been recorded from the locality.

Truncatulina (?) præcincta, Karrer sp.

Rotalina præcincta, Karrer, 1868, Sitzungsb. d. k. Ak. Wiss. Wien, vol. lvii, p. 189, pl. v, fig. 7.

Truncatulina præcincta, Karrer sp., Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 334, pl. lxxviii, fig. 1. Millett, 1904, Journ. R. Micr. Soc., p. 494.

A few specimens of a plano-convex form were met with. They are not quite typical, in having the limbate sutures only feebly developed.

Flint records *T. præcincta* from the Gulf of Mexico, at 169 and 196 fathoms, and Millett from the Malay Archipelago.

Genus **Anomalina,** Parker and Jones.

Anomalina polymorpha, Costa.

Anomalina polymorpha, Costa, 1856, Atti dell' Accad. Pontan., vol. vii, p. 52, pl. xxi, figs. 7–9. Brady, 1884, Rep. Chall., vol. ix, p. 676, pl. xcvii, figs. 3–7. Flint, 1899, Rep. U.S. Nat. Mus. (1897), p. 336, pl. lxxix, fig. 3. Chapman, 1901, Proc. R. Soc. Edin., vol. xxiii, p. 392, pl. i, figs. 4–6.

One specimen having a more than usually truncatulinoid test occurred in our sample.

A. polymorpha has already been obtained by the "Challenger" west of New Zealand, at 275 fathoms.

Genus **Pulvinulina**, Parker and Jones.

Pulvinulina truncatulinoides, d'Orbigny sp.

Rotalina truncatulinoides, d'Orbigny, 1839, Foram. Canaries, p. 132, pl. ii, figs. 25–27.
R. micheliniana, d'Orbigny, 1840, Mém. Soc. Géol. France, sér. 5, vol. iv, p. 31, pl. iii, figs. 1–3.
Pulvinulina truncatulinoides, d'Orb. sp., Rhumbler, 1900, in K. Brandt's Nordische Plankton, heft. 14, p. 17, fig. 16.
P. micheliniana, d'Orb. sp., Millett, 1904, Journ. R. Micr. Soc., p. 500.

Although there seems to be reason for supposing that d'Orbigny's two works, to which reference is made above, were published almost simultaneously, yet the actual dates of publication differ, and therefore, according to the rule of priority, the better-known specific name, *P. micheliniana*, unfortunately must lapse.

This species has been already recorded for the South Pacific, and notably at sta. No. 169. It is not uncommon in our series.

Pulvinulina crassa, d'Orbigny sp.

Rotalina crassa, d'Orbigny, 1840, Mém. Soc. Géol. France, ser. 5, vol. iv., p. 32, pl. iii, figs. 7, 8.
Pulvinulina crassa, d'Orbigny sp., Flint, 1899, Rep. U.S. Nat. Mus. (897), p. 329, pl. lxxiv, fig. 1. Rhumbler, 1900, in K. Brandt's Nordische Plankton, heft 14, p. 17, figs. 12, 14, 15. Millett, 1904, Journ. R. Micr. Soc., p. 500.

This species has been recorded from the east coast of New Zealand (sta. 169). It is rather rare in our series.

Pulvinulina canariensis, d'Orbigny sp.

Rotalina canariensis, d'Orbigny, 1839, Foram. Canaries, p. 130, pl. i, figs. 34–36.
Pulvinulina canariensis, d'Orb. sp., Rhumbler, 1900, in K. Brandt's Nordische Plankton, heft 14, p. 16, figs. 10 *a*, *b*, 11. Millett, 1904, Journ. R. Micr. Soc., p. 500.

Previously recorded from the South Pacific. It is rare in our sounding.

Pulvinulina auricula, Fitchel and Moll sp.

Nautilus auricula, var. *a*, Fichtel and Moll, 1878, Test. Micr., p. 108, pl. xx, figs. *a–c*.
Pulvinulina auricula, F. and M. sp., Egger, 1893, Abhandl. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 415, pl. xvii, figs. 26–28.

This species is not uncommon in the present series.

It has occurred in the South Pacific at depths between 17 and 275 fathoms ("Challenger"). Egger also records it from Western Australia.

Pulvinulina schreibersii, d'Orbigny sp.

Rotalina schreibersii, d'Orbigny, 1846, Foram. Foss. Vienne, p. 154, pl. viii, figs. 4–6.

Pulvinulina schreibersii, d'Orb. sp., Egger, 1893, Abhandl. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 409, pl. xviii, figs. 31–33, 67–69.

This handsome species is not uncommon in our series.

Brady notes this form as being almost peculiar to the South Pacific.

Genus **Rotalia,** Lamarck.

Rotalia soldanii, d'Orbigny.

Rotalia (Gyroidina) soldanii, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 278, No. 5; modèle No. 36.

Rotalina soldanii, d'Orb. sp., Goës, 1894, K. Svenska Vet.-Akad. Handl, vol. xxv, p. 99, pl. xvi, fig. 812.

Rotalia soldanii, d'Orb. sp., Millett, 1904, Journ. R. Micr. Soc., p. 503.

Rare; somewhat diminutive specimens.

Rotalia papillosa, var. **compressiuscula,** Brady.

Rotalia papillosa var. *compressiuscula*, Brady, 1884, Rep. Chall., vol. ix, p. 708, pl. cvii, figs. 1 *a–c*; pl. cviii, figs. 1 *a–c*.

This is a Pacific species, with a rather wide distribution in that area. It does not appear to have been previously found in the neighbourhood of Great Barrier Island.

Rather common.

Rotalia clathrata, Brady.

Rotalia clathrata, Brady, 1884, Rep. Chall., vol. ix, p. 709, pl. cvii, figs. 8, 9.

The localities whence this species has been obtained are all in the South Pacific, and lie between Australia and New Zealand. The nearest position to Great Barrier Island was the "Challenger" station 169.

Rare in our series.

Subfamily Polystomellinæ.

Genus **Nonionina**, d'Orbigny.

Nonionina umbilicatula, Montagu sp.

Nautilus umbilicatulus, Montagu, 1803, Test. Brit., p. 191 Suppl., p. 78, pl. xviii, fig. 1.

Nonionina umbilicatula, Mont. sp., Egger, 1893, Abhand. k. bayer. Ak. Wiss, cl. ii, vol. xviii, abth. ii, p. 426, pl. xix, figs. 36, 37. Millett, 1904, Journ. R. Micr. Soc., p. 600.

Brady records this species as abundant in the South Pacific. It was also found by Millett in the Malay Archipelago. Egger obtained it from soundings taken by the "Gazelle" off Mauritius and New Guinea.

Rare in our series.

Report on the Ostracoda.

All the species of *Ostracoda* here recorded, with the exceptions of *Asterone australis*, Brady, and *Cytherideis hedleyi*, sp. nov., have been previously described in the report on the dredgings made by the "Challenger,"* and the former species in a later publication by the same author.† The "Challenger" station nearest ours which yielded *Ostracoda* is No. 167, west of New Zealand, and from this three species only in common with our series are recorded. Among other localities which afford species in common with those of our list are: Off Booby Island, near Cape York, north-east Australia ("Challenger" sta. 187), and Cocos Island, Indian Ocean (coll., C. W. Andrews). Twelve species of *Ostracoda* of known forms occur in our dredging, but only four of these occur in each of the localities above mentioned; and, curiously, both of these dredgings were taken in quite shallow water. The species which occur both in our list and that from Booby Island are *Cythere tetrica*, *C. crispata*, *C. cancellata*, and *Xestoleberis margaritea*. Those from Cocos Island common to our list are *C. cancellata*, *C. prava*, *C. dictyon*, and *Xestoleberis margaritea*.

The following is a list of the *Ostracoda* found in the present material, and the species new to the list given in the "Index Faunæ Novæ-Zealandiæ" are marked with an asterisk. Of the fourteen species of *Ostracoda* given below, nine are new to the New Zealand area.

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* Reports "Challenger" Expedition, Zoology, pt. iii, 1880: *Ostracoda*, G. S. Brady.

† Trans. R. Soc. Edin., 1890, vol. xxxv, pt. ii (No. 14).

**Cythere cancellata*, G. S. Brady.
**C. crispata*, G. S. B.
**C. tetrica*, G. S. B.
**C. dictyon*, G. S. B.
**C. prava*, Baird sp.
C. dasyderma, G. S. B.
Krithe producta, G. S. B.
**Xestoleberis margaritea*, G. S. B. sp.
**X. africana*, G. S. B.
**Cytheridea hedleyi*, sp. nov.
**Cypridina danæ*, G. S. B.
Asterope australis, G. S. B.
Cytherella polita, G. S. B.
C. pulchra, G. S. B.

OSTRACODA.

Section PODOCOPA.

Family Cytheridæ.

Genus **Cythere**, Müller.

Cythere cancellata, G. S. Brady.

Cythere cancellata, G. S. Brady, 1868, Le Fonds de la Mer, vol. i, p. 62, pl. vii, figs. 8–9. *Idem*, 1880, Rep. Chall., Zoology, p. 73, pl. xiv, figs. 9 *a–e*. Chapman, 1902, Proc. Zool. Soc. Lond., p. 230.

Previously recorded from Tongatabu, 18 fathoms, and off Booby Island, Torres Strait, 6 to 8 fathoms. Also from Java (G. S. Brady).

The writer has recorded it from the littoral sands of the seaward face of Cocos Island (coll. by Dr. C. W. Andrews).

Cythere crispata, G. S. Brady.

Cythere crispata, G. S. Brady, 1868, Ann. and Mag. Nat. Hist., ser. 4, vol. ii, p. 221, pl. xiv, figs. 14, 15. *Idem*, 1880, Rep. Chall., Zool., pt. iii, p. 72, pl. xiv, figs. 8 *a–d*.

This species has a wide distribution. The "Challenger" dredgings yielding this species were from Port Jackson, 2 to 10 fathoms; Booby Island, 6 to 8 fathoms; and from anchor-mud at 7 fathoms in Hong Kong Harbour.

A right valve of this species was found in our dredging; it is not so sharply sculptured as in typical specimens, and at first sight would suggest affinity with *C. canaliculata*, Reuss. Our specimen differs from the last-named, however, in having the anterior extremity of the carapace, in edge view, decidedly wedge-shaped.

Cythere tetrica, G. S. Brady.

Cythere tetrica, G. S. Brady, 1880, Rep. Chall., Zool., pt. iii, p. 104, pl. xxiii, figs. 5 *a–d.*

This somewhat striking form has been previously recorded only from Booby Island, Torres Strait, 6 to 8 fathoms.

One right valve found in our series.

Cythere dictyon, G. S. Brady.

Cythere dictyon, G. S. Brady, 1880, Rep. Chall., Zool., pt. iii, p. 99, pl. xxiv, figs. 1 *a–y.*

Five separate valves of this widely distributed species were found, one of which appears to belong to a full-grown female, and shows the posterior spines arranged along the border of the shell. Another example is a small valve of the same sex, whilst the remainder are valves of male specimens.

Cythere prava, Baird sp.

Cythereis prava, Baird, 1850, Proc. Zool. Soc., pt. xviii, p. 254 (*Annulosa*), pl. xviii, figs. 13–15.

Cythere prava, Baird sp., G. S. Brady, 1880, Rep. Chall., Zool., pt. iii, p. 92, pl. xxii, figs. 4 *a–f.* G. S. Brady, 1890, Trans. R. Soc. Edin., vol. xxxv, p. 502. Chapman, 1902, Journ. Linn. Soc. Lond. (Zool.), vol. xxviii, p. 426. *Idem,* 1902, Proc. Zool. Soc. Lond., p. 231.

C. prava is a South Pacific form, but not exclusively so. It appears to be more at home in shallow water. Our specimen is a right valve, the surface of which is more than usually coarsely sculptured.

Cythere dasyderma, G. S. Brady.

Cythere dasyderma, G. S. Brady, 1880, Rep. Chall., Zool., pt. iii, p. 105, pl. xvii, figs. 4 *a–f*; pl. xviii, figs. 4 *a–f.*

In the "Challenger" dredgings this species was characterized as a deep-water form, so that its occurrence in the present sounding is somewhat exceptional. It is also widely distributed.

One right valve.

Genus **Krithe,** Brady, Crosskey and Robertson.

Krithe producta, G. S. Brady.

Krithe producta, G. S. Brady 1880, Rep. Chall., Zool., pt. iii, p. 114, pl. xxvii, figs. *a–j.* Chapman, 1902, Journ. Linn. Soc. Lond. (Zool.), vol. xxviii, p. 427.

This very variable form occurs oftenest in deep water. The deepest sounding from which Dr. Brady obtained his specimens was taken at 1,675 fathoms. The writer records

this species from the "Penguin" soundings round Funafuti at 1,489, 1,995, and 2,715 fathoms. He also obtained this species from soundings in the Arabian Sea, near the Laccadive Islands (s.s. "Investigator").

Not uncommon, but rather small, in the dredging off Great Barrier Island.

Genus **Xestoleberis**, G. O. Sars.

Xestoleberis margaritea, G. S. Brady sp.

Cytheridea margaritea, G. S. Brady, Trans. Zool. Soc., 1865, vol. v, p. 370, pl. lviii, figs. 6 *a–d*.

Xestoleberis margaritea, G. S. Brady, 1880, Rep. Chall., Zool., pt. iii, p. 127, pl. xxx, figs. 2 *a–g*. Chapman, 1902, Journ. Linn. Soc. Lond. (Zool.), vol. xxviii, p. 429. *Idem*, 1902, Proc. Zool. Soc. Lond., p. 231.

Dr. Brady found this species in the "Challenger" dredgings at one locality only—namely, off Booby Island, Torres Strait, 6–8 fathoms. The same author also records it from the Mediterranean and the Mauritius. The writer found it in the shallow-water sands of the outer beach and lagoon of Funafuti, where it was fairly common, and in the lagoon sands of Cocos Island.

One perfect carapace found off Great Barrier Island.

Xestoleberis africana, G. S. Brady.

Xestoleberis africana, G. S. Brady, 1880, Rep. Chall., Zool., pt. iii, p. 126, pl. xxx, figs. 4 *a–c*.

This is a very rare and restricted form. It was originally recorded from Simon's Bay, South Africa, 15 to 20 fathoms.

One left valve found in our dredging from Great Barrier Island.

Genus **Cytherideis**, Jones.

Cytherideis hedleyi, sp. nov.

Plate III, figs. 8 *a–c*.

Description.—Carapace elongated, compressed. Seen from the side, arcuate and siliquose; depressed in front; greatest height about the middle; posterior extremity slightly produced at the ventral angle; back evenly arched, ventral edge sinuous. Edge view elongate-ovate, rounded at the back, compressed in front; greatest thickness about the middle of the lower third. Surface of carapace ornamented with closely set polygonal areolæ or pittings, arranged in more or less regular concentric lines. A linear series of muscle-spots situated in a lateral depression of the carapace just below the median area. Length, 0·6 mm.; height, 0·225 mm.; greatest thickness of carapace, about 0·66 mm.

Affinities.—In outline our species is somewhat comparable with *C. foveolata*, G. S. Brady,* with the exception that the valves of that species are not produced in the postero-ventral region; it further essentially differs from ours in the surface-markings of the carapace, which in *C. foveolata* consist of a minute and dense punctation.

Another form of the same genus which we may compare with the present species is *C. andrewsi*, Chapman,† which, however, shows the following differences: Test less depressed at the anterior end; ornament not so distinctly polygonally areolate; and muscle-spots arranged in rosette form.

Very rare in our sounding.

Section MYODOCOPA.

Family Cypridinidæ.

Genus **Cypridina**, Milne-Edwards.

Cypridina (?) danæ, G. S. Brady.

Cypridina danæ, G. S. Brady, 1880, Rep. Chall., Zool., pt. iii, p. 156, pl. xxxvi, figs. 2 *a–d*.

The specimen before us is somewhat crushed, making an exact comparison difficult. It resembles the above species fairly closely in side view, but the relative proportions of the carapace in edge view are not clearly seen. Our specimen, like that of Brady's, is partially chitinous in places, and the anterior notch and posterior truncated beak are similarly shaped as in *C. danæ*. Brady's species is based on a single specimen obtained from Kerguelen Island at a depth of 120 fathoms.

Genus **Asterope**, Philippi.

Asterope australis, G. S. Brady.

Asterope australis, G. S. Brady, 1890, Trans. R. Soc. Edin., vol. xxxv, pt. ii, p. 515, pl. iv, figs. 1, 2. *Idem*, 1898, Trans. Zool. Soc., vol. xiv, p. 431, pl. xliii, figs. 1–8.

It is of great interest to meet with this genus in the present collection, since the cypridinads are comparatively rare in the Southern Hemisphere, so far as they are at present known. Brady's original specimens of *A. australis* came from the coral islands of the Pacific—Nouméa, 2–4 fathoms; Suva, inside reef; Mango Island, fringing-reef; Apia, Upolu, reef and shore pools.

One typical carapace was found in the present sounding off Great Barrier Island.

* Ann. Mag. Nat. Hist., ser. 4, vol. vi, 1870, p. 454, pl. xix, figs. 1–3.
† Proc. Zool. Soc. Lond., 1902, p. 229, text figure 27.

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Section PLATYCOPA.

Family CYTHERELLIDÆ.

Genus **Cytherella**, Jones.

Cytherella polita, G. S. Brady.

Cytherella polita, Brady, 1868, Les Fonds de la Mer, p. 161, pl. xix, figs. 5–7. *Idem*, 1880, Rep. Chall., Zool., pt. iii, p. 172, pl. xliii, figs. 5 *a–c* ; pl. xliv, figs. 1 *a–g*.

This species has been recorded by Brady from Port-au-Prince, West Indies ; Wellington Harbour, New Zealand ; and from the mouth of the Rio de la Plata.

Two separate valves of a small and large individual respectively are now recorded from Great Barrier Island, 110 fathoms.

Cytherella pulchra, G. S. Brady.

Cytherella pulchra, G. S. Brady, 1865, Trans. Zool. Soc., vol. v, p. 361, pl. lvii, figs. 1 *a–d*. *Idem*, 1880, Rep. Chall., Zool., pt. iii, p. 174, pl. xliv, figs. 3 *a*, *b*.

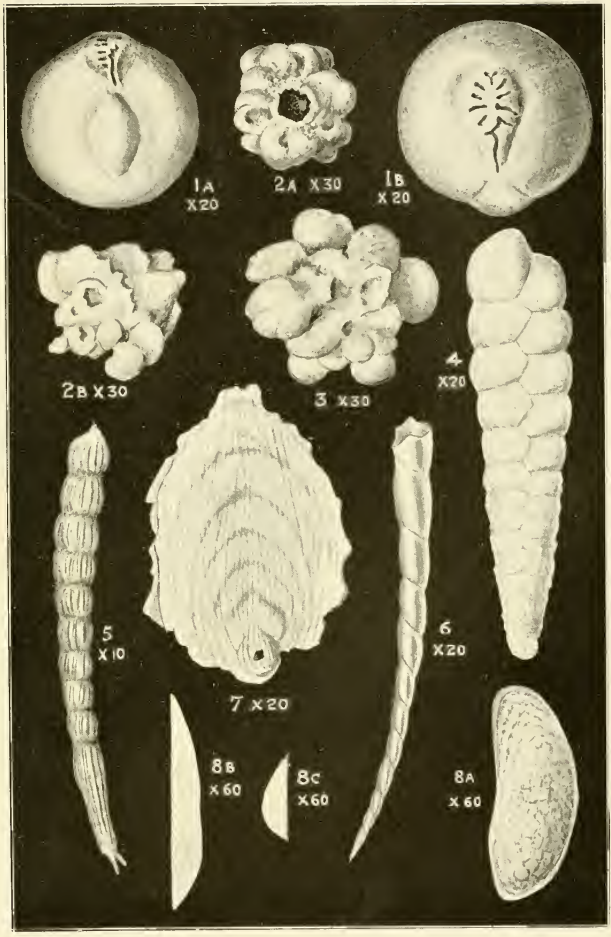
This species has previously occurred at Bermudas, 435 fathoms ; Port Jackson, Australia, 2–10 fathoms ; west coast of New Zealand, 150 fathoms ; and off Ascension Island, 420 fathoms.

A typical example of this species was found in our sample off Great Barrier Island.

[NOTE.—Examples of all the species of *Foraminifera* and *Ostracoda* referred to in this paper, as well as the types, are deposited in the Colonial Museum, Wellington.]

EXPLANATION OF PLATE III.

Fig. 1. *Planispirina sphæra*, d'Orbigny sp. : *a*, lateral aspect of a specimen with labyrinthic aperture ; *b*, ditto, oral aspect. × 20.
Fig. 2. *Brachysiphon corbuliformis*, gen. et sp. nov. : *a*, oral aspect ; *b*, lateral aspect. × 30.
Fig. 3. *B. corbuliformis*, gen. et sp. nov. Another specimen, aboral view. × 30.
Fig. 4. *Spiroplecta sagittula*, Defr. sp., var. *fistulosa*, Brady. Lateral aspect ; to show senile character of later chambers, like that of *Textularia agglutinans*, var. *porrecta*, Brady. × 20.
Fig. 5. *Nodosaria (Dentalina) obliqua*, Linn. sp., var. *vertebralis*, Batsch var. × 10.
Fig. 6. *N. (D.) filiformis*, d'Orbigny. Specimen having pointed aboral end like *N. (D.) elegans*, d'Orbigny sp. × 20.
Fig. 7. *Frondicularia reussi*, Karrer. Lateral aspect. × 20.
Fig. 8. *Cytherideis hedleyi*, sp. nov. : *a*, left valve ; *b*, edge view of valve ; *c*, end view. × 60.



DEEP-SEA FORAMINIFERA.—Chapman.